

**Remarks/Arguments:**

Applicants thank the Examiner for the Office Action of June 18. Applicants respectfully traverse all outstanding rejections, and request reconsideration of the same. Applicants have amended claim 12 in order to correct a typographical error. Applicants have also amended claim 18 in order to claim a particular aspect of the invention. Support may be found in Figure 13.

The claimed process is directed to reacting sodium sulfide with oxygen in the presence of a transition metal oxide catalyst in a liquor (with a concentration of 0.05 to 6.5 grams catalyst per liter of liquor), wherein the consumption rate of  $O_2$  is at least  $1.5 \times 10^{-4}$  moles/l/sec, such that a selectivity of polysulfides greater than 65% is achieved. Another aspect of the claimed process is directed to reacting sodium sulfide with oxygen in the presence of a transition metal oxide in a liquor (with a concentration of 0.5 to 6.5 grams of transition metal oxide per liter of liquor), where the partial pressure and consumption rate of  $O_2$  are controlled, such that a selectivity of polysulfides greater than 60% is achieved.

In the Office Action, the Examiner rejected claims 1-9 and 12-17 under 35 U.S.C. 103 (a) as obvious over the article titled, "Production of Polysulfide Liquor in a Kraft Mill's Causticizers" by Uloth et al. This rejection is respectfully traversed.

With respect to the rejection of claims 1-3 and 15, the Examiner takes the position that the difference between the claims and the disclosure of the Uloth et al. article is in the oxygen consumption rates and range of selectivities. However, the Examiner relies upon circular reasoning. While not pointing out

any oxygen consumption rate in the Uloth et al. article, the Examiner maintains that the claims are obvious over the Uloth et al. article. Then, the Examiner maintains that the oxygen consumption rate required by the claims is inherent in the disclosure of Uloth et al. Thus, the Examiner makes an inherency argument that provides support for an obviousness argument that, in turn, supports the inherency argument, all by relying upon the holding of *In re Wertheim*, 541 F.2d 257 (CCPA 1976). Applicants respectfully assert that this circular argumentation does not rise to a legally sufficient rejection under 35 U.S.C. 103(a) because it impermissibly bootstraps the limited disclosure of Uloth et al.

In order to apply the holding of *In re Wertheim* properly, the Examiner must show that all of the limitations of the claims are disclosed by the prior art, except that a particular range of numbers recited by the claims only overlaps or lies within the disclosed range of numbers. In the Office Action, the Examiner fails to make this showing because he has not shown that an oxygen consumption rate in Uloth et al. either overlaps or lies within the claimed selectivity range. Without this necessary showing, the holding of *In re Wertheim* is inappropriately applied and thus distinguished in the instant case. For this reason alone, the Examiner should withdraw the rejection of claims 1-3 and 15.

The Examiner also relies upon *In re Wertheim* to support an inherency argument, notwithstanding the improper circular reasoning detailed above. Applicants respectfully point out that *In re Wertheim* does not address the issue of inherency, much less address the issue of inherency and simultaneous

obviousness of overlapping or overlying ranges. As such, *In re Wertheim* may also be distinguished from the instant case for this reason.

In order to provide a legally sufficient inherency argument, the Examiner must point to some technical rationale showing why the particulars of a prior art reference would suggest to one of ordinary skill in the art that a missing claim limitation is inherent in that reference. In the present application, the Examiner has pointed to no technical rationale showing why the particulars of Uloth et al. would suggest the claimed oxygen consumption rate of  $1.5 \times 10^{-4}$  mol O<sub>2</sub>/l/sec. Without such a showing, the Examiner has failed to make a legally sufficient rejection relying upon inherency. For this reason, the Examiner should withdraw the rejection of claims 1-3 and 15.

Because the Examiner has failed to make a proper obviousness rejection for claim 1, all obviousness rejections of claims dependent upon claim 1 (i.e., claims 2-17) must similarly fall. As such, the Examiner should withdraw the rejection of claims 2-17.

With particular respect to the rejection of claims 12-14, the Examiner again relies upon the holding of *In re Wertheim* to provide an obviousness rejection. However, the times recited in claims 12-14 neither overlap nor lie within temperatures disclosed by Uloth et al. Furthermore, the Examiner has pointed to no motivation for one of ordinary skill in the art to depart from the times recited in Uloth et al. Thus, the Examiner should withdraw the rejection of claims 12-14 for this reason alone.

With particular respect to the rejection of claims 4-5, 7-8, the Examiner fails to show why these claims are obvious over the disclosure of Uloth et al. Instead, the Examiner summarily rejects all of them in reliance upon In re Wertheimer. However, the obviousness holding at issue in In re Wertheimer only applies to a claimed range that overlaps that of the prior art or lies within it. Claims 4-5 and 7-8 do not recite any ranges. As such, the Examiner should withdraw the rejection of claims 4-5 and 7-8 for this reason alone.

In the Office Action, the Examiner rejected claims 10-11 under 35 U.S.C. 103(a) as obvious over Uloth et al. in view of U.S. Patent No. 3,860,479 (the '479 patent). Applicants respectfully traverse this rejection.

In the rejection of these claims, the Examiner takes the position that because the '479 patent discloses the use of temperatures in polysulfide generation that overlap the temperatures recited by claims 10-11, it would be obvious to use these temperatures in the process of Uloth et al. However, the Examiner points to no motivation as to why one skilled in the art would depart from the temperatures recited in Uloth et al. to use the wholly different temperatures of the '479 patent. In this situation, the Examiner fails to make a legally sufficient obviousness rejection because he relies upon a deficient "obvious to try" standard. As such, the Examiner should withdraw the rejection of claims 10-11.

In the Office Action, the Examiner also rejected claims 18-22 under 35 U.S.C. 103(a) as obvious over Uloth et al. Applicants respectfully traverse this rejection. Applicants have amended claim 18 such that a transition metal oxide concentration in the liquor is 0.5 to 6.5 g/l. Applicants respectfully assert that Uloth et al. fails to disclose, teach or suggest a transition metal oxide in this concentration. Indeed, the only mention is made of a concentration of 0.16-0.18 g/l. Moreover, Applicants assert that the art of record provides no motivation to adjust this concentration upward such that the process of Uloth et al. utilizes a transition metal oxide of 0.5 to 6.5 g/l. As such, the Examiner should withdraw the rejection of claims 18-22.

For the foregoing reasons, Applicant believes that all of the rejections have been overcome.

Applicant further respectfully asserts that the claimed invention is patentable over the remaining art of record, either alone or in combination. In the Office Action, although the Examiner identifies other art of record, he fails to point out how any of it, alone or in combination, discloses, teaches or suggests the claimed invention. Applicant respectfully asserts that none of the remaining art of record does disclose, teach or suggest all of the claim limitations, especially the claimed catalyst concentration, oxygen consumption rate, and polysulfides selectivity.

In conclusion, for the reasons explained above, Applicant believes that claims 1-18 and 20-22 are patentable, thereby placing the application in condition for allowance. Applicant respectfully requests allowance of the same.

Should the Examiner believe that a telephone call would expedite prosecution of the application, he is invited to call the undersigned attorney at the number listed below. A petition for a two-month extension of time is being contemporaneously submitted with this submission with the required fee. Otherwise, it is believed that no fee is due at this time. If that belief is incorrect, please debit deposit account number 01-1375.

Respectfully submitted,



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**CERTIFICATE OF MAILING UNDER 37 CFR 1.8(a)**

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this 18<sup>th</sup> day of November, 2003.



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